

Interactive comment on “Cloud condensation nuclei activity at Jeju Island, Korea in spring 2005” by M. Kuwata et al.

M. Kuwata et al.

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We thank the referee for the useful comments and positive remarks. Our responses to the comments are described follows.

Comment: Section 3 experiment. In the first section you mention using the ideal solution approximation in calculating D_{crit} of atmospheric particles. This, in some respects, is justified for ambient particles, particularly when one cannot elucidate on the exact chemical composition. I am a little concerned about using the ideal approximation for calibration purposes to ensure consistency. You have indeed mentioned the use of a robust osmotic coefficient calculation to provide a measure of uncertainty in the estimation of SS in the CCN counter. However, wouldnt it be more scientifically sound to use this value, compare with measured CCN behaviour for ammonium sulphate particles and then obtain an estimate of the uncertainty?. Besides, the mixed systems

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you study in the atmosphere are likely to have different non-ideal characteristics than pure ammonium sulphate. By comparing ambient measurements with an idealised kohler theory framework, you can still infer important results as to the applicability of neglecting a full thermodynamic treatment and this would not effect the scientific quality of your work. I would always stress the need for using the most accurate theoretical frameworks wherever possible.

Reply: We agree with the remarks of the reviewer. The Pitzer model is more valid than the ideal solution approximation. However, we still find the use of the ideal solution approximation preferable for the closure study, to ensure consistency and to make the story simpler. Thus, in the revised manuscript, we change this part as follows; Δ The supersaturations calculated using the Pitzer model as the most probable value. However, we use the values based on the ideal solution approximation to maintain consistency in the closure.

Comment: Section 4. Page 15813 line 4- change corresponds to correspond

Reply: We correct this point.

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 15805, 2007.

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